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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/653,732	09/01/2000	Andrew Joseph Paszkowski	011916.107912	5800

6980 7590 10/20/2003

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EXAMINER	
BARRY, CHESTER T	

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 10/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/653,732	PASZKOWSKI, ANDREW JOSEPH	
	Examiner	Art Unit	
	Chester T. Barry	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,18-20 and 22-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-20 and 22-24* is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Claims 1, 5 – 9 are rejected under 35 U.S.C. Sec. 103(a) as obvious over CHILTON '400 in view of Iler '134, Iler 266, Munch '418, and USP 4865744.

USP 3560400 to CHILTON describes a method for producing high purity colloidal silica comprising the steps of:

providing a quantity of alkali metal silicate, e.g., ***sodium*** silicate (***not*** potassium silicate as recited in the pending claims) (col 2 line 60, hereinafter "2/60"),

subjecting said quantity of ***sodium*** silicate to a cation exchange process 2/60 to remove a first portion of ***sodium*** therefrom to produce a quantity of colloidal silica, i.e., "colloidal dispersion of silicic acid containing polysilicate units having a plurality of hydroxyl groups") 2/60-65, and

washing said quantity of colloidal silica with water (Chilton refers to "net flow" of water from the sol compartment to the water compartment, 1/62) in an ultrafiltration device 1/57-58 to produce a quantity of high purity colloidal silica.

CHILTON recognizes that the stability of silica sols is dependent on pH. 3/67. CHILTON teaches, in the event that ions permeate through the ultrafiltration membrane during the ultrafiltration step or a change in pH is otherwise brought about, that "appropriate additions of . . . alkali to the concentrated sol can be made as required" 3/66-74. Accordingly, it would have been obvious to have added a base to the colloidal silica while washing the colloidal silica to maintain a desired pH and cation concentration, as taught by CHILTON, and to have used a hydroxide base, such as sodium or potassium hydroxide, because alkali hydroxide bases are notoriously well-known to be

strong bases and widely available. Furthermore, addition of an aqueous alkali base to the sol effects additional water washing of the sol. Alternatively, it would have been obvious to have added washing water to the silica sol compartment of the UF unit to desalt undesired salt ions therefrom, as suggested by Iler '266 8/60-63. Washing out undesired ions across a UF membrane is a common technique in the "workup" of colloids in a variety of chemical process industries, such as dye suspensions (USP 4865744) or silver halide emulsions (USP 5348418).

It would have been obvious to have substituted potassium silicate for the sodium silicate described by CHILTON because Iler '134 teaches that potassium silicate and sodium silicate are known in the colloidal silica art as equivalent starting materials. Iler '134 2/18.

Per claim 5, see CHILTON's disclosure of average particle size of 25 nm or less 2/54.

Per claim 7, CHILTON describes sulfonated polystyrene cation exchange resins cross linked with divinyl benzene. 3/22

Per claim 8, it would have been obvious to have used deionized water so as not to introduce undesired ions that are typically found in water that has not been deionized, and so that the water used has a neutral pH.

Claims 2 – 4 are rejected under 35 U.S.C. Sec. 103(a) as obvious over CHILTON '400 and Iler '134, Iler 266, Munch '418, and USP 4865744, as applied to claim 1 above, further in view of the ZACSIL E200 ultra high purity potassium

silicate product brochure, JONES '870, and/or applicant's admission. It would have been obvious to have used ultra high purity starting materials, such as ZACSIL E200 potassium silicate, to make a product, concentrated colloidal silica, which itself is used to CMP process semiconductor wafers in order to avoid contamination thereof, as suggested by JONES '870 1/13-22. This brand of potassium silicate contains less than the recited limitation of 100 ppm or less sodium, as shown by applicant's admission. A product having sodium levels below 1 ppm necessarily results given the low sodium potassium silicate starting material used.

Claim 7 is rejected under 35 U.S.C. Sec. 112, 2nd parag., for failing to particularly point out and distinctly claim the subject matter for which patent protection is sought. Claim 7 recites a limitation wherein the selected cation exchange resin may be a "sulfonated styrene-dibenzene copolyme[r]." It is unclear what a "sulfonated styrene-dibenzene copolymer" is.

Claim 7 is rejected under 35 U.S.C. Sec. 112, first paragraph, enablement, for failing to provide an enabling disclosure for the claimed invention. Applicant's disclosure fails to teach the skilled artisan how to make (or obtain commercially) a "sulfonated styrene-dibenzene copolymer." As noted above, it is unclear what the structure of such a copolymer would be, so it would be very difficult for an organic synthetic chemist of extraordinary skill – far above that of the hypothetical person having ordinary skill in the art – to make such a copolymer.

Claims 18 – 20, 23 - 24 are allowed.

CHESTER T. BARRY
PRIMARY EXAMINER

703-306-5921